



Gate controller GC1000

User Manual

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Purpose of the document

This document describes *GC1000*, its usage, features, and operation and how to set operation parameters.

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GC1000

GC1000 is a remote control device for electrotechnical equipment (opening or raising the gates, heating or ventilating the premises, watering the lawn or the greenhouse, controlling pump, boiler, transporter and other systems). Control commands are transmitted via GSM.

Upon receiving a call to the inserted SIM card number, the *GC1000* checks the user number according to the set mode, rejects the call and switches output relay contacts. It is also possible to switch *GC1000* output relay contacts using SMS message.

Features:

- 3 operation modes:
 - a) mode *All* – *GC1000* output relay contacts may be switched by any caller;
 - b) mode *Phone list* – *GC1000* output relay contacts may be switched by those, whose phone number is either on the user or the administrator list,
 - c) mode *Administrator* – *GC1000* output relay contacts may be switched by those, whose phone number is on the administrator list;
- Memory of 5 administrator and 1000 user names and their phone numbers,
- Phone number and name list export and import to, for example, MS *Excel*,
- Customisable switching period of output relay contacts,
- 2 inputs, for example, for the mounting case lock tamper or gate end position sensor,
- Sending SMS messages about input events,
- Customized description of input events,
- Sending confirmation of implemented control commands via SMS,
- Periodically sending an informative and detail test message,
- Distributing of SMS messages to the administrators according to *GC1000* event types,
- Setting all operation parameters using SMS messages,
- Remote *GC1000* reset,
- Ignoring unauthorised calls and SMS messages,
- Comprehensive and clear *GC1000* operation light indication,
- Exceptionally simple to install and run.

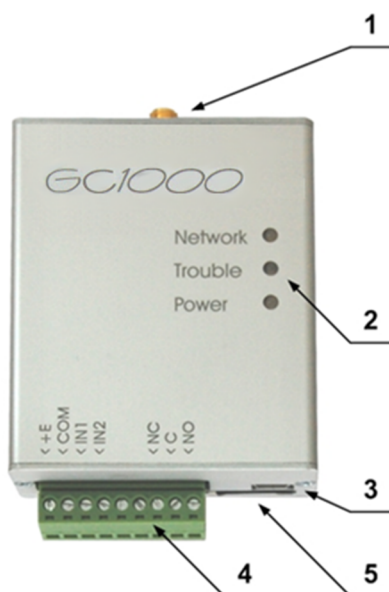
Technical parameters

GSM modem frequencies	850 / 900 / 1800 / 1900 MHz
Power supply voltage	12 ... 36 VDC
Current usage	Standby 50 – 100 mA While sending SMS – up to 0,5 A
Voltage commutated by the output relay	up to 30 VDC
Current commutated by the output relay	up to 1 A
Output relay control command	By phone call or SMS message
Switching of output relay contacts	<i>impulse</i> (control command commutates the output relay from 1 to 60 seconds), <i>level</i> (control command commutates the output relay until the next control command, e.g., next phone call)
Memory	Up to 5 administrator names and their phone numbers Up to 1000 user names and their phone numbers
Inputs	2 (IN1 and IN2), Set for NO (resistance $\geq 10\text{ k}\Omega$) or NC (resistance $\leq 0,5\text{ k}\Omega$) type circuits
Working environment	Temperature from -10°C to +50°C with humidity of 93% (no condensation)
Parameters setting	a) Computer software <i>Configurator</i> using USB b) Special syntax SMS messages
GC1000 dimensions and weight	79 x 65 x 25 mm aluminium case, 120 g

Package content

GC1000	1 pc.
Adhesive mounting tape (10 cm)	1 pc.

GC1000 components



1. SMA connection of GSM antenna
2. Light indicators
3. USB Mini-B connection for GC1000 programming
4. External contacts connector
5. SIM card slot

Purpose of contacts

<i>Contact</i>	<i>Description</i>
+E	Power supply + terminal
COM	Power supply – terminal and common terminal for IN1, IN2 inputs
IN1 or IN2	Terminals for input circuits
	2 unused terminals
NC	Output relay NC terminal
C	Output relay common C terminal
NO	Output relay NO terminal

Light indication

<i>Indicator</i>	<i>Status</i>	<i>Description</i>
NETWORK (denotes communication between the GC1000 and GSM network)	OFF	GC1000 initialisation in progress
	Yellow flashing	Registration to GSM network in progress
	Green light (5 sec.) + N green flashes	N - relative GSM signal level. 3 flashes – minimum sufficient level (30%), 10 flashes – maximum (100%).
TROUBLE (denotes GC1000 operation)	OFF	No faults
	Green light	Programming mode
	Red light (5 sec.) + red flashes:	
	1 flash	Insufficient power supply voltage, below 9 V
	2 flashes	No SIM card
	3 flashes	PIN code error
	4 flashes	Registration to GSM network failed for 60 seconds
	5 flashes	Operation mode setting error *
	6 flashes	Threshold GSM signal level (~ 30%)**
POWER (denotes GC1000 power supply)	7 flashes	Critical error in the parameters structure
	8 flashes	Error in the user phone number list structure
	OFF	No power supply
	Green light	Normal power supply
	Yellow light	Low supply voltage, below 11,5V
	Yellow flashing	Insufficient power supply voltage, below 9 V

Notes:

* - not a single administrator phone number is entered and the user list is prohibited.

** - use a portable GSM antenna with a cable and fit it to the exterior of the case if GC1000 is mounted into the metal case of automatics.

GC1000 installation

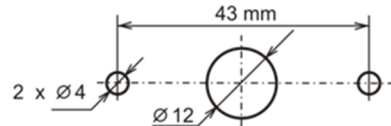
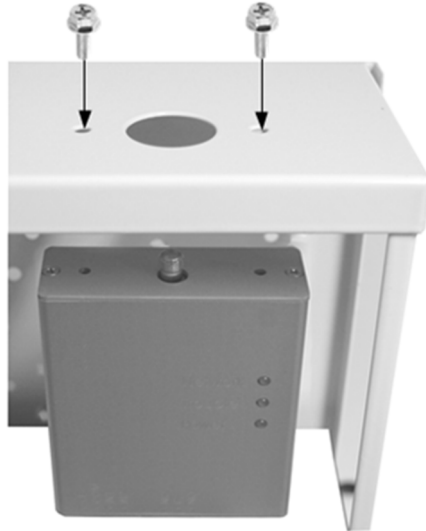
Follow this GC1000 installation procedure in order to ensure that GC1000 will be available for use to everyone with whom SIM card phone number is shared.

1. Purchase GC1000. Factory settings should not be changed!
2. Insert the SIM card of the desired network provider into the GC1000.
 - It is not recommended to use pre-paid contract SIM cards.
 - SIM card PIN code must be disabled.
 - SIM card must be already registered in the network.

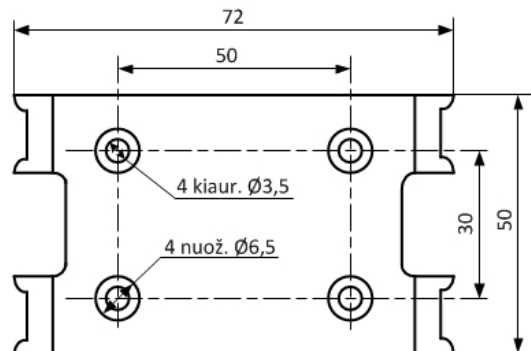
3. Embed the *GC1000* into the automatics mounting case.

a) Use adhesive mounting tape to mount the *GC1000* inside of the case.

b) Drill three holes in the mounting case (see picture below) and screw the *GC1000* using to screws M3x6.



c) Insert the *GC1000* into the plastic holder PH which fitted inside the mounting case.



4. Screw the GSM antenna on.

5. Connect *GC1000* power supply and automatics control circuits to the *GC1000* contacts according to the schemes laid out below.

6. Turn on the power supply of the system.

7. Wait until the *GC1000* starts, LED *Network* lights up for 5 seconds and flashes at least 3 times, LED *Trouble* does not light up and LED *Power* lights up in green without interruption. If these indications are not as such, see section “**Light indication**”.

8. Check if the automatics can be controlled using a phone call – call the SIM card number of the *GC1000*.

9. Send these two SMS messages in the following order to the *GC1000* SIM card number in order to gain the *administrator* status:

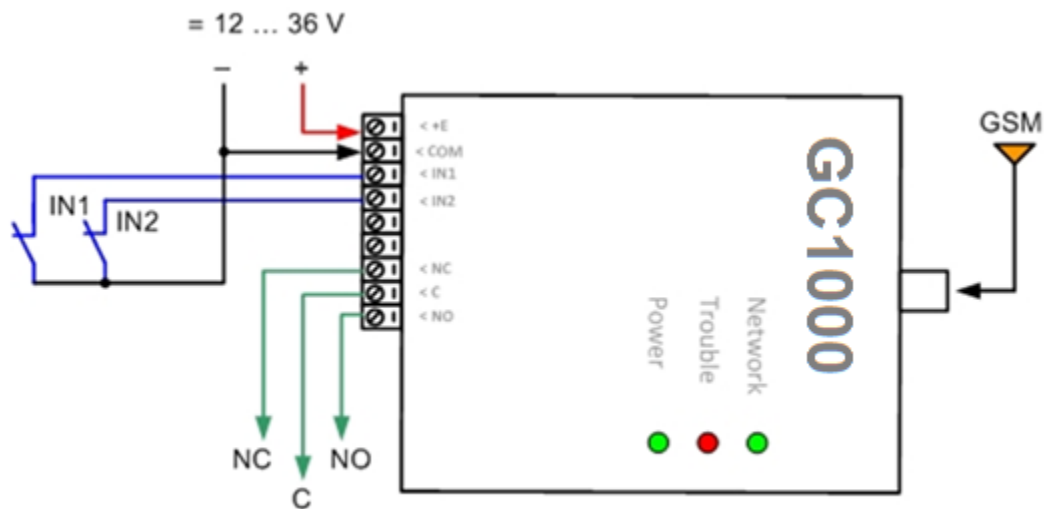
1) **123456 SETAP APNR1:+372xxxxxx** (+372... setting the phone number as administrator phone number)

2) **123456 PSW 654321** (example of a SMS message setting a new password. 654321 refers to your new password)

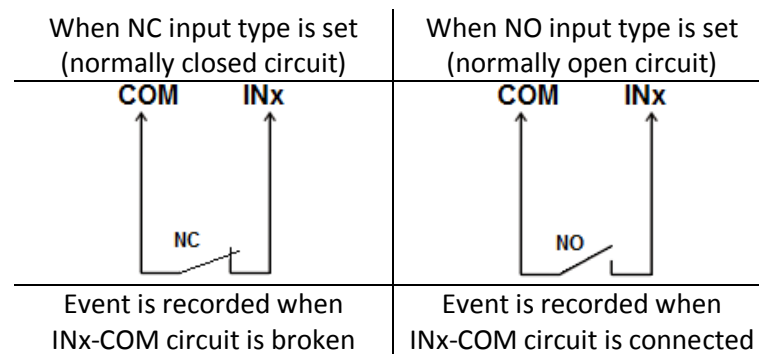
If you wish your system to be controlled only by authorised persons, *GC1000* will need to be configured using SMS messages or computer software *Configurator* via USB. For more information see

sections “Configuration using software *Configurator*” and “Configuration and control using SMS messages”.

Wiring diagrams



Inputs connection

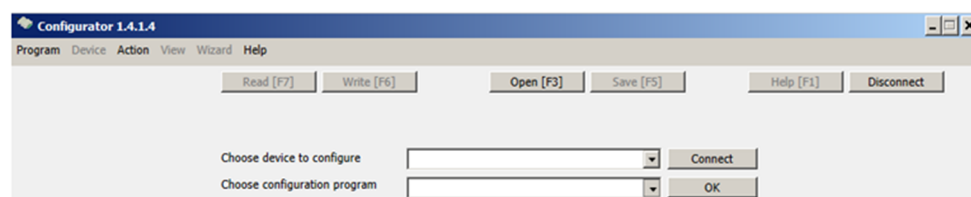


Configuration using software *Configurator*

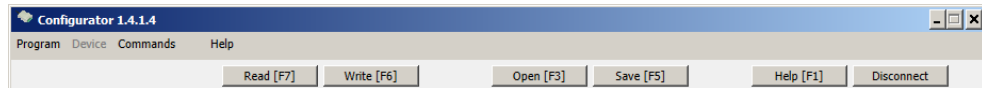
All *GC1000* operation parameters are set using computer software *Configurator*.

Connecting to a computer

1. Connect the *GC1000* to the computer USB slot using a USB cable (e.g., USB type A to Mini-B 5-pin cable). 5 V power supply from the computer via USB is sufficient for *GC1000* programming.
2. Run *Configurator*.
3. Software will determine the connected device type in several seconds and will open a new window for programming. Device may be located manually, if it cannot be found automatically.



4. Click **Read [F7]**.



Function of the keys:

Read	Read current <i>GC1000</i> operation parameters
Write	Record new <i>GC1000</i> operation parameters
Open	Open an operation parameters file stored on a computer
Save	Save an operation parameters file on computer
Help	Open the <i>GC1000</i> manual
Disconnect	Disconnect the controlled from software <i>Configurator</i>

Status: SN: 002011 BL: 0.01 FW: 1.02 HW: 0.01 Status: HID

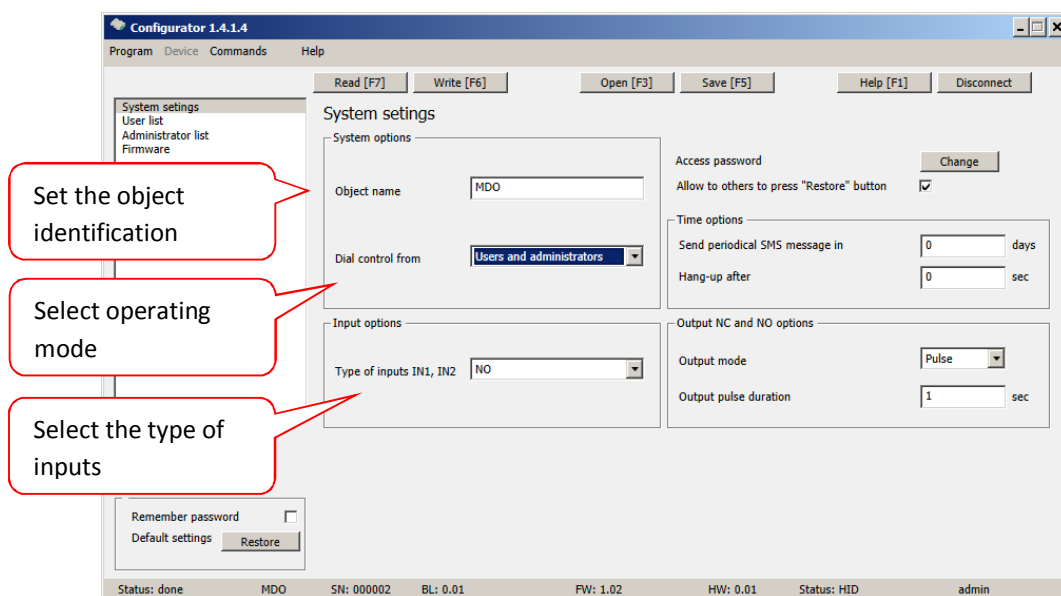
Information about the connected device

In the program status bar will be displayed where:

Status	<i>Done</i> is displayed after every successful reading or saving action
MDO	Product name
SN:	<i>GC1000</i> serial number
BL:	<i>GC1000</i> firmware boot loader version
FW:	<i>GC1000</i> firmware version
HW:	<i>GC1000</i> hardware version
Status:	Port number or name via which <i>GC1000</i> is connected to software <i>Configurator</i>
admin	User access level

Configuration of *GC1000* operation

Set the main operation settings in the menu In the main menu **System settings** set the main operation settings:



Parameter	Description
Object name	GC1000 identification name that will be featured in every GC1000 SMS message
Dial control from	<p>a) <u>All</u> – controlled by anyone calling the GC1000 SIM card number.</p> <p>b) <u>From the phone numbers list and administrators</u> – controlled by anyone calling the GC1000 SIM card number and having their phone number on <i>User</i> and <i>Administrator</i> lists. All other calls will be ignored. <i>Administrators</i> will be able to send control and configuration SMS messages. Also, only they will receive SMS confirmations of sent command and other GC1000 SMS messages.</p> <p>c) <u>Administrators</u> – controlled by anyone calling the controlled SIM card number and having their phone number on the <i>Administrator</i> list. All other calls will be ignored. <i>Administrators</i> will be able to send control and configuration SMS messages. Also, only they will receive SMS confirmations of sent command and other GC1000 SMS messages.</p>
Type of inputs IN1, IN2	Choosing of input circuit type either NC or NO
Send Test message in	Setting period of the sending of GC1000 test messages
Output mode Output pulse duration	<p>Output relay operation mode:</p> <p>a) <i>Level</i> – relay contacts status is switched to other command status, e.g. other phone call, once GC1000 receives a control command</p> <p>b) <i>Impulse</i> – relay contacts status is switched to the opposite to set impulse length, once GC1000 receives control command, e.g. a phone call</p>
Admi and SMS password	<p>Six-digit password for configuration and control using SMS messages. Default - 123456.</p> <p>Click <i>Change</i> to change the password to a desired one.</p> <p>Tick <i>Allow to change</i> to allow everyone who connects GC1000 to a computer to reset to factory settings. When unticked, the <i>administrator</i> password must be entered in order to reset to factory settings.</p>
Allow to restore defaults	<p>Changing the current GC1000 configuration to the initial default factory configuration.</p> <p>Tick <i>Remember the password</i> for computer to remember the new <i>Admi and SMS</i> password.</p>

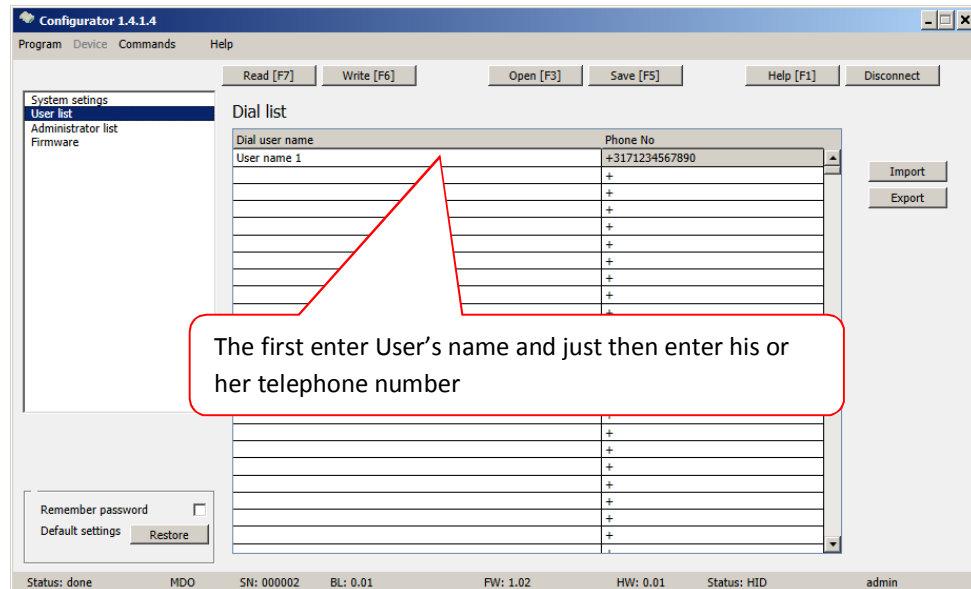
User list

The list of users, which are allowed to control the equipment by phone call is made in the menu **User list**.

1. Enter the user names and their phone numbers in the fields of the user list in program *Configurator*. Alternatively, create the list of user names and their phone numbers in MS Excel and click **Upload** to upload the list to the program.
2. Click **Save** (F5) to save the list in the GC1000 memory.

Note:

Numbers must be entered in international format using prefix +.

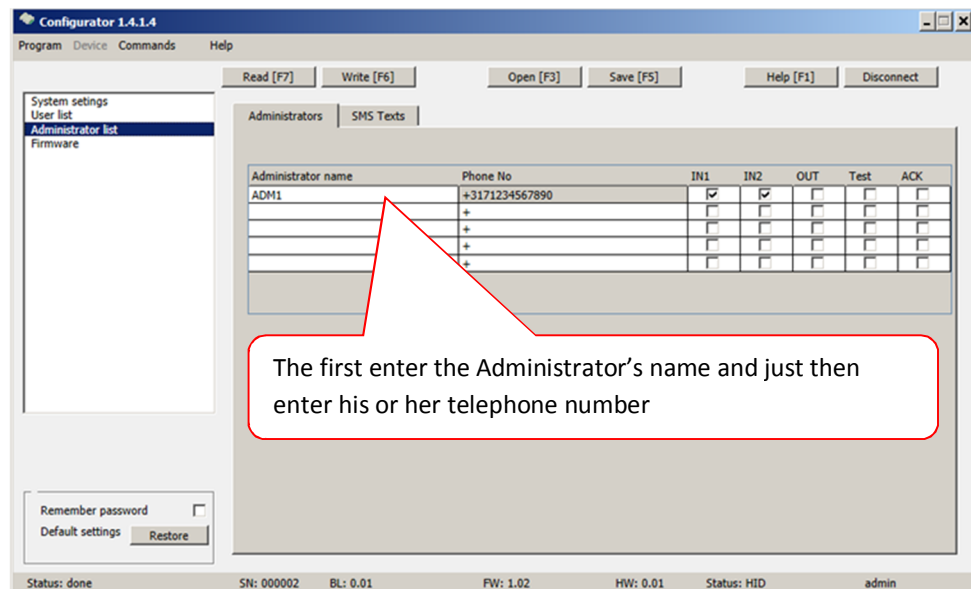


Administrator list

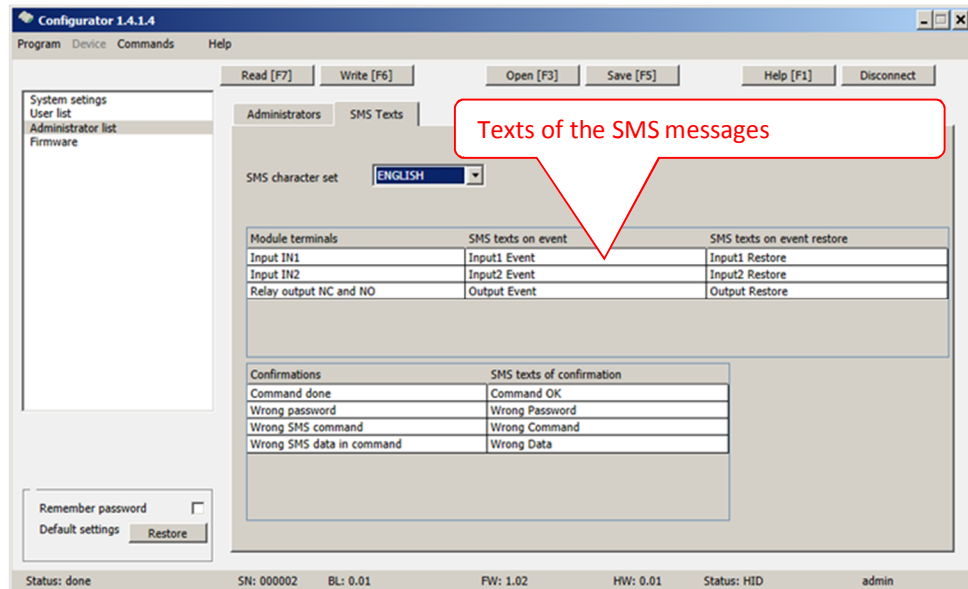
Enter at least one administrator name and their phone number in the tab **SMS addressees** in the menu **SMS messages**. *GC1000* will follow the commands received from these numbers and will send them SMS messages.

Notes:

- If those on this list want to send control SMS messages, they must know the six-digit control password.
- Phone number of the first *administrator* may only be edited and cannot be deleted.
- *GC1000* will not work if not a single *administrator* phone number is entered and control for the users will be denied.



Select the encoding language for sent SMS message texts in tab **SMS texts**. Enter desired confirmation texts for SMS texts and commands. In case of an event, *GC1000* will send the appropriate message with the customised text.



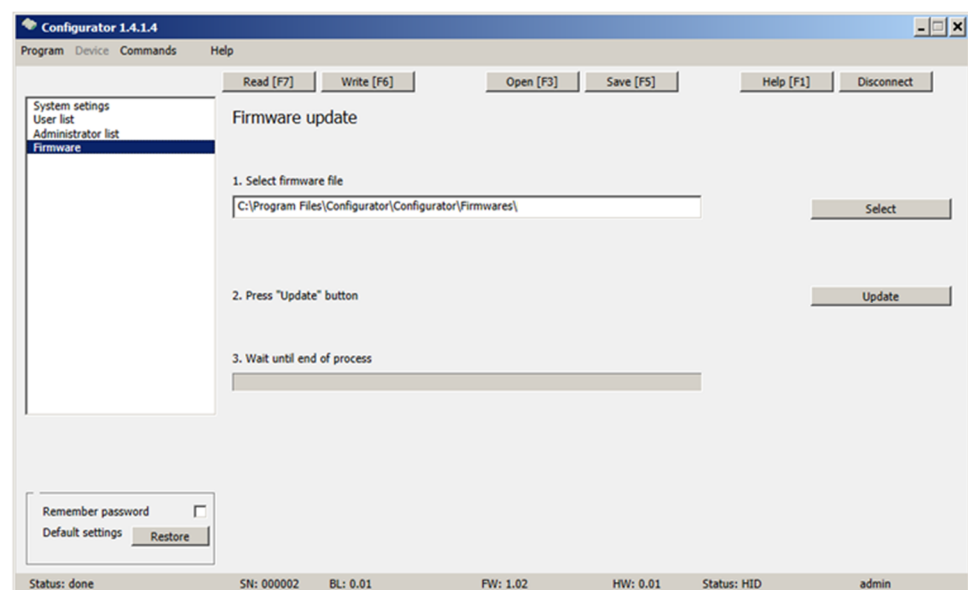
Recording and saving the configuration

1. Click **Record [F6]** to record your configuration into the *GC1000* memory.
2. *GC1000* configuration may be saved on the computer. Click **Save [F5]** and create a file for *GC1000* configuration. Click **Open [F3]** to access it when needed.
3. Click **Disconnect** to disconnect the programmed device.

Updating the *GC1000* firmware

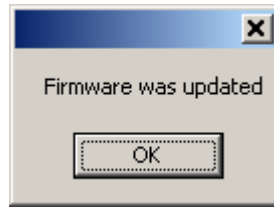
Manufacturer may improve the operation of *GC1000* and release a new *GC1000* firmware version. Every user has an opportunity to update operation of their *GC1000*.

1. Connect the *GC1000* to a computer using USB cable.
2. Run *Configurator*.
3. Select **Firmware** in the menu.
4. Click **Find** and select the desired firmware file.



5. Click **Update**.

- Wait until the prompt appears.



- Click **OK**. All operation settings will remain the same after the update.

Configuration and control using SMS messages

GC1000 parameters may be set and changed by sending SMS messages from a phone number, which is on the *administrator* list. In case there are not any entered *administrator* phone numbers, become an administrator by sending the following SMS message to the controlled SIM card number: **123456 SETAP APNR1:+372xxxxxxx**.

Structure of the command SMS message:

PASSWORD SPACE **COMMAND** SPACE **PARAMETERS**

Example: 123456 SPACE SETAP SPACE APNR1:+37212300000

Here: 123456 password
 SETAP command
 APNR1:372 parameters

Commands sent in SMS messages:

No.	Command	Contents	Description
1	RESET		Resetting <i>GC1000</i> : E.g.: 123456 RESET
2	INFO		Inquiring about the <i>GC1000</i> status: E.g.: 123456 INFO
3	PSW	New password	Changing the <i>GC1000</i> password: E.g.: 123456 PSW 654321
4	SETC	ALL LIST DISABLE	Permission to control by phone call: All callers (default); Only those on User and Administrator lists; Only those on the Administrator list . E.g.: 123456 SETC LIST
5	SETI	NC NO	Setting input IN1, IN2 types: Normally Closed (NC); Normally Open (NO); E.g.: 123456 SETI NO
6	SETO	00 05	Output OUT operation: Switching level mode; Specified length (seconds) impulse; E.g.: 123456 SETO 05
7	SETT	00 30	Sending period of test messages: Do not send; Send during the specified hours; E.g.: 123456 SETT 30

8	SETH	00 10	Answering phone calls: Reject before answering (default); Answer the call and hold for the specified period of time; E.g.: 123456 SETH 05
9	SETL	ENG LIT RUS	Setting the communication language: English (default); Lithuanian; Russian; E.g.: 123456 ENG
10	SETAP	APNR1:+372xxxxxx APNR2:+372xxxxxx APNR3:+372xxxxxx APNR4:+372xxxxxx APNR5:+372xxxxxx	Entering administrator phone numbers: 1st phone number; 2nd phone number; 3rd phone number; 4th phone number; 5th phone number; E.g.: 123456 SETAP APNR1:+372xxxxxx
		APNR1:DEL APNR2:DEL APNR3:DEL APNR4:DEL APNR5:DEL	Deleting administrator phone numbers: 1st phone number; 2nd phone number; 3rd phone number; 4th phone number; 5th phone number; E.g.: 123456 SETAP APNR2:DEL
11	SETAE	IN1 IN2 OUT TEST ACK	Allocation of messages to administrators: Sending IN1 input events; Sending IN2 input events; Sending control events; Sending test messages; Sending responses to command SMS E.g.: 123456 SETAE APNR1:IN1-ON,IN2-ON,OUT-ON,TEST-OFF,ACK-ON
12	SETAN	APNR1:Name APNR2:Name APNR3:Name APNR4:Name APNR5:Name	Entering an administrator name: Entering the name of the 1st administrator; Entering the name of the 2nd administrator; Entering the name of the 3rd administrator; Entering the name of the 4th administrator; Entering the name of the 5th administrator; E.g.: 123456 SETAN APNR2:Name
		APNR1: APNR2: APNR3: APNR4: APNR5:	Deleting an administrator name: Deleting the name of the 1st administrator; Deleting the name of the 2nd administrator; Deleting the name of the 3rd administrator; Deleting the name of the 4th administrator; Deleting the name of the 5th administrator; E.g.: 123456 SETN APNR2:
13	TXTA	<Object name>	Entering an object name: E.g.: 123456 TXTA object name
14	TXTE	IN1:<Text> IN2:<Text> OUT:<Text>	Entering an event message text: IN1 input event; IN2 input event; OUT output event; E.g.: 123456 TXTE IN1:1st input event
15	TXTR	IN1:<Text>	Entering a restoration event message text: IN1 input restoration;

		IN2:<Text> OUT:<Text>	IN2 input restoration; OUT output restoration. E.g.: 123456 TXTR IN2:2nd input restore
16	SETP	+372xxxxxx +372xxxxxx,<Name>	Entering a user name and their phone number: User phone number; User phone number + name. E.g.: 123456 SETP +372xxxxxx E.g.: 123456 SETP +372xxxxxx,Name
17	DELP	+372xxxxxx <Name>	Deleting a user phone number: User phone number; User name E.g.: 123456 DELP +372xxxxxx E.g.: 123456 DELP Name
18	OUT	ON OFF	Changing the outputstatus: Changing output status to ON; Changing output status to OFF. E.g.: 123456 OUT OFF

Automatics control

Phone call

1. Call to the *GC1000* using a SIM card number.
2. Control command will be implemented immediately after the *GC1000* rejects the call.

SMS message

Note: Phone number must be on the *GC1000's administrator* list.

1. Send SMS message:
Example: **123456 OUT OFF** to turn the output relay to the state *off*;
Example: **123456 OUT ON** to turn the output relay to the state *on*;
2. Wait until you receive the confirmation of command implementation (if specified during the configuration):

Command OK	command implemented;
Wrong Password	wrong password;
Wrong Command	wrong command;
Wrong Data	wrong parameters;
Fatal Error	<i>GC1000</i> error (this response cannot be described by the user)

GC1000 SMS messages

GC1000 will send SMS messages to the *administrators* once a *GC1000* event takes place or *GC1000* receives a control message via SMS.

Every time 12 V power supply voltage is turned on, *administrators* are send a SMS message:

SMS text	Description
Dev:	Device name
IMEI: 863071014319393	IMEI code of the GSM modem
SN: 000002	Serial number of the <i>GC1000</i>
FW: 0.02	<i>GC1000</i> firmware version
ENGLISH	SMS text encoding

Administrators are send a test SMS message in a time period specified during the configuration:

<i>Text</i>	<i>Meaning</i>	<i>Description</i>
Power:	MDO	Object name entered in the field Object name
Signal:	24,5V	Power supply in voltage
IN1:	90%	Signal level in percent
	OK	IN1 input status:
	False	<ul style="list-style-type: none"> • circuit intact • circuit is broken
IN2:	OK	IN2 input status:
	False	<ul style="list-style-type: none"> • circuit intact • circuit is broken
OUT:	ON	Output relay status:
	OFF	<ul style="list-style-type: none"> • ON • OFF
Used Phone:		
Admin:	x/5	x phone numbers out of 5 possible entered
User:	x/1000	x phone numbers out of 1000 possible entered
	Fatal ERROR!!!	GC1000 is ignoring the phone numbers list due to errors

Example of a SMS message response to the SMS inquiry:

<i>Text</i>	<i>Meaning</i>	<i>Description</i>
GC1000	Object name	Object name specified during the configuration is displayed in the message
Input1 Event	Event in input IN1 circuit	GC1000 event SMS text specified during the configuration is displayed in the message

Key terms

Input event – change of the resistance (exceeding the specified limits) in the circuit between outputs **IN** and **COM**.

NC (Normally Closed) – type of circuit between outputs **IN** and **COM**. Resistance in the circuit between the contacts is low (circuit is closed) in normal state, i.e. resistance is not higher than specified. Increase in resistance above the specified limit will trigger a message about the event.

NO (Normally Open) – type of circuit between outputs **IN** and **COM**. Resistance in the circuit between the contacts is high (circuit is open) in normal state, i.e. resistance is not lower than specified. Decrease in resistance below the specified limit will trigger a message about the event.

Safety requirements

Be sure to familiarise yourself with this manual before using the *GC1000*.

GC1000 may only be set up and maintained by trained specialists, who possess knowledge about operation of GSM devices and their safety requirements. External power supply must be turned off when controlled is being set up!

GC1000 must be set up in limited access areas and in safe distance from sensitive electronic equipment in the premises. *GC1000* is not resistant to vibration, other mechanical effects, humidity and aggressive chemical environment.



Cases, transformers and other used devices must comply with LST EN60950 standard safety requirements.

GC1000 is powered by 12-36 V DC power.

A bipolar automatic fuse must be set up to protect from a too high electric current supply in the circuit. Separation gap between the contacts must not be smaller than 3 mm. The fuse must be set up in a place known to the maintenance specialists. Device is disconnected from the electrical network by turning off the automatic fuse.

Warranty and limitation of liability

The manufacturer provides a 24 month warranty. Warranty coverage begins on the day of the product purchase-sale agreement or on the issue date of an invoice or a fiscal check.

- The manufacturer is not liable for product malfunction, if the product is set up or used not in accordance to the product user manual.
- The manufacturer is not liable for product malfunctions, if they have occurred due to the loss of GSM/GPRS/Internet connection or due to failure in the networks of the connection service provider.
- The manufacturer is not liable for the interruption or restriction of GSM/GPRS/Internet connection service to the product buyer or the user of the product and shall not reimburse the resulting property or non-pecuniary damages.
- The manufacturer is not liable for the interruption or restriction of the electricity supply to the product buyer or the user of the product and shall not reimburse the resulting property or non-pecuniary damages.